IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Yoshiyuki HIRAGA et al Conf. : 6683

Appl. No.: 09/623,756 Art Unit: 1713

Filed: September 8, 2000 Examiner: D. R. Wilson

For: STABILIZED FLUORINE-CONTAINING POLYMER AND METHOD FOR STABILIZING FLUORINE-CONTAINING POLYMER

DECLARATION OF YOSHIYUKI HIRAGA UNDER 37 C.F.R. 1.132

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

I, Yoshiyuki Hiraga, a citizen of Japan, c/o Yodogawa Works of Daikin Industries Ltd., 1-1, Nishihitotsuya, Settsu-shi, Osaka-fu, Japan, declare and say as follows:

1. I am one of the joint inventors of the above-identified application;

2. I graduated from the Department of Chemical Machinery Engineering of the Faculty of Engineering, Kyushu University, Fukuoka, Japan in March 1987 and received a Master Degree of Engineering in March 1989 from the Graduate School of Kyushu University;

3. Since April 1989 to the present, I have been employed by Daikin Industries Ltd. and engaged in research works on the developments of processes for post-treatment of fluororubbers, for high pressure emulsion polymerization and post-treatment of fluoropolymers.

4. I read the Office Action issued on December 19, 2002 in the above-identified application and Shreyer et al (US Patent No. 3,085,083) cited therein. Then, I performed the following experiment. I beg to submit the results of the experiments below.

Experiments

It may be best to repeat Example V of Shreyer et al. However, it is practically impossible to repeatedly wash a copolymer to remove any inorganic materials in the polymer, which may be "potassium" compounds, if the polymer of Example V was prepared in the same manner as in Example I. Furthermore, according to the result of the experiments carried out at 260°C in Example V and the experiences of the researchers of Daikin Industries, when a polymer is prepared using a polymerization initiator which does not leave any inorganic materials in the polymer and about 5 to 10 ppm of potassium is added to the polymer, the polymer may have substantially the same properties as one prepared using a polymerization initiator having potassium. Thus, the following experiments were carried out.

The procedures described in Example 1 described in the specification of this application were repeated to obtain copolymer powder. To the powder, potassium hydroxide was added in an amount of (a) 5 ppm or (b) 10 ppm. Then, the powder was subjected to the same treatment as that of Example V of Schreyer et al at 260°C.

The treated polymer was melt kneaded with a kneader under the same conditions as those employed in Example 1 described in the specification of this application to obtain a melt kneaded material. The number of terminal groups and a degree of coloration in each step are shown in the following Table.

Table

Polymer	Treating step	Number of terminal groups				Coloration
		COOH	COF	$CF=CF_2$	CF_2H	
(a)	Before treatment	530				Ivory
	After thermal treatment	0	70		520	Pale brown
	After kneading	20	70		450	Brown
(b)	Before treatment	530				Ivory
	After thermal treatment				540	Ivory with slight brown
	After kneading		20	*	490	Pale brown

Note: * Trace amount, which could not be quantitatively measured.

The formation of the unstable terminal groups after kneading cannot be suppressed by the treatment method of Schreyer et al.

The undersigned declares further that all statements made herein of this own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so that made are punishable by fine or imprisonment, or both, under 18 U.S. Code 1001 and that such willful false statements may be jeopardize the validity of this application or any patent issuing thereon.

Yoshiyuki Hiraga

Dated this 28th day of July, 2003